

REMARKS

The Office Action mailed March 13, 2008 has been carefully considered. Within the Office Action Claims 13-17, 35, 51, 52 and 54 have been rejected. The Applicants have amended Claim 51. Reconsideration in view of the following remarks is respectfully requested.

The 35 U.S.C. § 112, Second Paragraph Rejection

Claims 13-17, 35, 51, 52 and 54 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicants regards as the invention. This rejection is respectfully traversed.

Under M.P.E.P. 2173.02, in reviewing a claim for compliance with 35 U.S.C. 112, second paragraph, the examiner must consider the claim as a whole to determine whether the claim apprises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. 112, second paragraph, by providing clear warning to others as to what constitutes infringement of the patent. The essential inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. Definiteness of claim language must be analyzed, not in a vacuum, but in light of:

- (A) The content of the particular application disclosure;
- (B) The teachings of the prior art; and
- (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

In determining definiteness, the examiner should allow claims which define the patentable subject matter with a reasonable degree of particularity and distinctness. Some latitude in the manner of expression and the aptness of terms should be permitted even though

the claim language is not as precise as the examiner might desire. Examiners are encouraged to suggest claim language to applicants to improve the clarity or precision of the language used, but should not reject claims or insist on their own preferences if other modes of expression selected by applicants satisfy the statutory requirement. M.P.E.P. 2173.02

Rejection under U.S.C. § 102

Claims 13-17, 35, 51, 52 and 54 stand rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent No. 5,141,894 to Bisaro et al. (hereinafter “Bisaro”). The Applicants respectfully traverse.

According to the M.P.E.P., a claim is anticipated under 35 U.S.C. § 102(a), (b) and (e) only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.

In particular, Figure 4d of Bisaro shows a substrate 10, for example in silicon, comprising superficial layer 13 consisting in a zone disturbed by implantation (see col. 4, 64 to col. 5, 13). A preliminary layer of GaAs is deposited on the superficial layer 13 by epitaxy (see the abstract). Then, the epitaxy of the layer is resumed to form epitaxial layer 16 on layer 11 (see col. 5, 11-15). A disturbed zone 15 is created, by ion implantation, in layer 16 (see col. 5, 18-19). A final layer 17 is epitaxially grown on layer 16 (see col. 5, 19-23).

On Page 4 of the office action, first paragraph, it is stated that “the epitaxial growth layer reads on the claimed “thin layer” of claim 35. It is stated in the office action that the layer is understood to be “bonded... by molecular adhesion” because the layers would delaminate if there was not molecular adhesion present.” However, assimilating epitaxial growth layer to a layer bonded by molecular adhesion is not correct.

In an epitaxial growth scenario, the atoms deposited on a substrate continue the same crystal structure as the substrate. For this reason, the material of the substrate and the material of the epitaxial layer must have lattice constants differing no more than a percent not to introduce misfit dislocations (see pages 9 and 10 of “Semiconductor Wafer Bonding” by Q.Y. Tong and U. Gosele, John Wiley & Sons, Inc). Wafer bonding (or molecular adhesion) involves surface forces between two faces put into close contact. There is no need that the materials of the elements to join be crystalline and have close lattice constants. The material may be non-crystalline. There are mainly three types of surface forces acting between two solids in sufficient proximity: (1) van der Waals attraction forces, (2) electrostatic Coulombic forces, and (3) capillary forces. The strength of the molecular adhesion corresponds to “bonding energy”. The object of the claimed subject matter is to control the bonding energy to permit the absorption of stresses brought to the compliant substrate.

Conclusion

It is believed that this reply places the above-identified patent application into condition for allowance. Early favorable consideration of this reply is earnestly solicited.

If, in the opinion of the Examiner, an interview would expedite the prosecution of this application, the Examiner is invited to call the undersigned attorney at the number indicated below.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case. A two month extension fee is included with this response. Please charge any additional required fee or credit any overpayment not otherwise paid or credited to our deposit account No. 50-1698.

Respectfully submitted,
THELEN REID BROWN RAYSMAN & STEINER LLP

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/Suvashis Bhattacharya/
Suvashis Bhattacharya
Reg. No. 46,554

THELEN REID BROWN RAYSMAN & STEINER LLP
P.O. Box 640640
San Jose, CA 95164-0640
Tel. (408) 292-5800
Fax (408) 287-8040